

## 01: Introduction to SAT Chemistry

SAT Chemistry		
<ul style="list-style-type: none"> <li>Covers first year, college-prep, high school chemistry.</li> </ul>		
Multiple Choice SAT Exam		
<ul style="list-style-type: none"> <li>1 hour; No calculators—only a periodic table; 85 questions.</li> <li>Tips:                             <ul style="list-style-type: none"> <li>Move on when you get stuck...you're not expected to know everything!</li> <li>Only guess if you can eliminate 2 or more choices. You're deducted ¼ point for every wrong answer.</li> <li>Get used to working without a calculator.</li> <li>Scan all the choices before choosing your answer.</li> <li>Try to rephrase things into terms you're more comfortable with.</li> <li>Beware of absolutes—there are very few things in chemistry that are absolute!</li> </ul> </li> </ul>		
“CE” Questions		
<p>The SAT Chemistry exam has a unique type of question that asks if two statements are true or false.</p> <p>If both statements are true, and the second one is the correct explanation for the first one, then you are also to bubble in the “CE” bubble (for “correct explanation”).</p>		
General Problem-Solving Strategy		
<p><b>Step 1:</b> Identify what's being given.  <b>Step 2:</b> Clarify what's being asked.                      If necessary, rephrase the question.  <b>Step 3:</b> Select a strategy                      Trial &amp; error, search, deductive reasoning, knowledge-based, working backwards.  <b>Step 4:</b> Solve using the strategy.  <b>Step 5:</b> Review the answer.</p> <p><b>Example:</b>                      Name the following organic molecules: <math>\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_3</math></p>		
Step	Description	Information
1	Identify what's given	Drawing of the structure
2	Identify what's asked	Name of the structure
3	Strategy: Knowledge based	To name single-bond organic molecules: Count the longest chain of carbon and use the corresponding prefix with “-ane” Name each side branch and include the name with the carbon number on the main chain (number from the side closest to the side-branch).
4	Apply the strategy	Count the longest carbon chain: 4 Prefix for that number: but- Side-chain name: methyl on carbon # 2 Final name: 2-methyl butane
5	Review the solution	Work backwards. “2-methyl” means a $\text{CH}_3$ group on the second carbon. “butane” means 4 carbons in the longest chain with all single bonds.

KUDOS Method		
<p>Use the <b>KUDOS method</b> for solving word problems.</p> <p><b>K</b> = Known  <b>U</b> = Unknown  <b>D</b> = Definition  <b>O</b> = Output  <b>S</b> = Substantiation</p>		
<ul style="list-style-type: none"> <li><b>K (Known)</b> <ul style="list-style-type: none"> <li>Use units to identify information.</li> <li>Write information symbolically.</li> <li>Look for implied information.</li> <li>Write out chemical equations.</li> </ul> </li> <li><b>U (Unknown)</b> <ul style="list-style-type: none"> <li>What is the problem looking for?</li> <li>Write information symbolically.</li> </ul> </li> <li><b>D (Definition)</b> <ul style="list-style-type: none"> <li>Find equalities to convert.</li> <li>Choose &amp; Re-arrange equations.</li> <li>Look for missing information in other places.</li> <li>If you cannot find enough information, re-evaluate your plan.</li> </ul> </li> <li><b>O (Output)</b> <ul style="list-style-type: none"> <li>Plug in values to the equations (use constants as needed).</li> <li>Check unit cancellation &amp; perform the calculation.</li> </ul> </li> <li><b>S (Substantiation)</b> <ul style="list-style-type: none"> <li>Check validity of your answer.</li> <li>Check units.</li> <li>Check significant figures.</li> </ul> </li> </ul>		
<p><b>Example:</b>                      What is the partial pressure of <math>\text{H}_2</math> if the total pressure is 1.75 atm &amp; the partial pressure of <math>\text{H}_2\text{O}</math> is 0.22 atm?</p>		
STEP	SOURCE INFORMATION	WRITE DOWN
<b>K</b>	total pressure is 1.75 atm	$P_{\text{total}} = 1.75 \text{ atm}$
	pressure of $\text{H}_2\text{O}$ is 0.22 atm	$P_{\text{H}_2\text{O}} = 0.22 \text{ atm}$
<b>U</b>	What is the partial pressure of $\text{H}_2$	$P_{\text{H}_2} = ? \text{ atm}$
<b>D</b>	Dalton's Law of Partial Pressure	$P_{\text{total}} = P_{\text{H}_2} + P_{\text{H}_2\text{O}}$ So $P_{\text{H}_2} = P_{\text{total}} - P_{\text{H}_2\text{O}}$
<b>O</b>	Output of the equation	$P_{\text{H}_2} = P_{\text{total}} - P_{\text{H}_2\text{O}}$ $P_{\text{H}_2} = 1.75 \text{ atm} - 0.22 \text{ atm}$ $P_{\text{H}_2} = 1.53 \text{ atm}$
<b>S</b>	Substantiation	1.53 atm is reasonable for a $P_{\text{total}}$ of 1.75 atm. “atm” is the pressure unit given in the problem. 2 decimal places given → 2 in answer

How to Use This Cheat Sheet: These are the keys related this topic. Try to read through it carefully twice then rewrite it out on a blank sheet of paper. Review it again before the exam.